



Toothache of non-odontogenic origin: a case report

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Introduction

Patients with dental pain can often localize the area of their pain, the so-called pain site. Frequently, the pain site is also the pain source. However, there are many conditions in which the pain site and source are not the same. Mimickers of tooth pain are many and are not uncommon in the maxillofacial area; Von Korff found that 12% of a large study population reported facial pain within a six month period (1). Due to extensive neural convergence of first order neurons in the head and neck, the somatosensory cortex may have a vague, diffuse sense of location or can completely misidentify the pain source (2). The purpose of this Clinical Update is to differentiate odontogenic from non-odontogenic pain utilizing a case report.

Endodontic evaluation

A 38 year old active duty male with a chief complaint (CC) of "pain in lower molar" presented as a referral to the NPDS Endodontics Clinic. The patient stated he was in persistent 3/10 pain in the lower right sextant and described it as dull and throbbing. A review of systems revealed no systemic disease. The patient was not taking any medications, had no drug allergies and vital signs were within normal limits. The dental history revealed the pain began two weeks prior and escalated to 6/10 pain during the morning and at night. The patient reported that a "gum bump" recently appeared in the mandibular right area but had since resolved. Non-surgical root canal therapy (NSRCT) had been performed on both teeth #'s 30 & 31 several years earlier. An extra-oral examination revealed no swelling and no lymphadenopathy with normal facial symmetry. Upon palpation of the muscles of mastication, sensitivity to the right masseter was noted. An intra-oral exam revealed teeth #'s 30 & 31 were restored with all metal restorations with intact margins and no recurrent caries. No swelling or sinus tracts were noted and incisal opening was normal. Endodontic tests revealed: Teeth #'s 19, 29, 30 & 31 were non-sensitive to palpation, percussion and Tooth Slooth®. These teeth had normal mobility with probing depths of 2-3 mm. Sensibility testing with Endo Ice elicited responsive, non-lingering responses for teeth #'s 19 & 29, while #'s 30 & 31 produced no response. Electric pulp tester results revealed teeth #'s 19 & 29 responded while #'s 30 & 31 produced no response. The clinician was unable to reproduce the patient's chief complaint. PA radiographs (Fig. 1) revealed a widened periodontal ligament (PDL) associated with the mesial root apex of tooth #31. In comparison with historical radiographs taken prior to NSRCT, the periapical lesion associated with tooth #31 had decreased significantly in size. A cone beam computed tomography (CBCT) was ordered to rule out other apical pathosis and possible root fracture. The CBCT was interpreted by a board certified oral maxillofacial radiologist showing neither apical pathosis nor root fracture. Due to the inability to reproduce the patient's chief complaint, as well as the presence of masseter

tenderness, the patient was referred to the Orofacial Pain Center for evaluation.

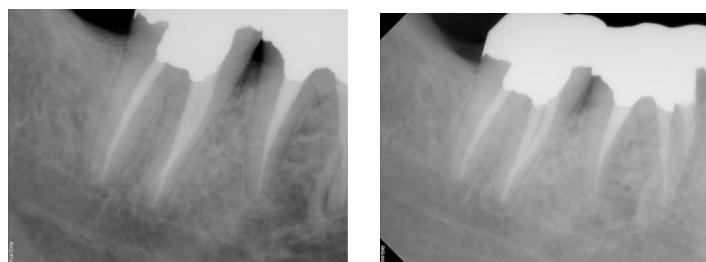


Fig. 1- Periapical (PA) radiographs of teeth #30 and 31.

Orofacial Pain evaluation

History of the present illness was reviewed. The patient reported a daily, constant, dull and diffuse preauricular ache with masticatory muscle fatigue that was most uncomfortable in the morning. Initially the pain "felt like I needed another root canal on the lower right side," but was now bilateral with non-specific tooth or jaw pain to the upper left and lower right sextants. The CC of pain intensity had gradually decreased to an average 4/10 from 8/10. The right-side inner earache and parulis described as lingual to teeth #30 and 31 were no longer present. He described an association of the onset of pain with increased stress, sleep disturbance and decreased opportunities for exercise due to work demands. The pain was aggravated by chewing and holding the tongue to the roof of the mouth (or between his teeth) to prevent clenching. Estimated tooth contact time was 8-10 hours a day and the patient was self-aware of both day and nighttime jaw clenching and grinding. Ibuprofen (800mg) attenuated, but did not completely relieve the pain. Past medical history was remarkable for tension-type headaches for more than ten years. Headaches had increased in frequency (3x/week vs. sporadic) and intensity (6/10 vs. 4/10) consistent with the onset of the CC pain.

Significant findings upon clinical examination were as follows: Jaw range of motion was within normal limits; however, the CC pain was replicated and intensity increased to a 5/10 in the right preauricular area upon a maximum interincisal opening of 56mm. The CC was also replicated with teeth clenching in maximum intercuspation and on tongue blades. There were no TMJ noises, deflection, deviation or pain with laterotrusive or protrusive movement. Muscle palpation revealed generalized cervical muscle tenderness and right temporalis pain. Protrusion versus light resistance also identified tenderness to the right lateral pterygoid muscle. Palpation of the right temporal tendon replicated the diffuse "toothache pain" described by the patient. Limited oral exam findings were within normal limits aside from noted scalloping of the tongue. Review of the existing panoramic radiographs showed mild bilateral condylar flattening and gonial notching (no changes between 1994 and the most recent image from 2009).

Differential diagnosis:

1. Myofascial pain disorder (MPD) with referral to teeth #30-31.
2. Myalgia (masticatory/cervical)
3. Episodic tension-type headache
4. Bruxism (nocturnal/diurnal)

Treatment plan:

1. Patient education – Discussed the findings, differential diagnosis and pathophysiology of non-odontogenic tooth pain. Reassured the patient that no invasive, irreversible treatment was required.
2. Habit reversal therapy – verbal and written instructions on how to identify and correct for non-neutral posture the jaw, tongue and head. The patient was also instructed to discontinue chewing gum.
3. Pharmacological therapy – Cyclobenzaprine (10mg) 1 tab qhs was given to take advantage of sedating effects circa bedtime; whereas Methocarbamol (500mg) 1-2 tabs TID was prescribed for daytime use as it is less sedating.

Telephone follow-up one week later: the patient reported generalized improvement in pain of about “55%”. The mandibular right side pain and morning toothache pain had resolved; however, mild bilateral preauricular pain remained. The patient associated the persisting pain with ongoing bruxism and tongue posturing. Sleep quality had also improved and was now restorative.

Four weeks after the orofacial pain evaluation, the patient returned to the endodontic clinic for a follow up evaluation in 0/10 pain. The diagnostic and sensibility tests produced the same responses as during the initial endodontic evaluation.

Discussion

This case report highlights the importance of considering other pain sources when evaluating a patient with dental pain. It demonstrates that myofascial pain of the temporalis/ temporal tendon complex was the probable source of the perceived pain site within a tooth-bearing area. Several non-odontogenic disorders may refer pain to the teeth and include, but are not limited to, the following:

Myofascial pain disorder – MPD is defined by regional dull, aching muscle pain and the presence of trigger points in muscles, tendons or fascia (3). An essential diagnostic characteristic of this condition is that palpation of the trigger points refers pain to another area. Figure 2 shows common pain referral patterns as described by Travell and clearly shows involvement of the dentition (4). MPD is managed by muscle relaxers, trigger point injections, stretch and postural awareness exercises.

Headache – Both migraine and trigeminal autonomic cephalalgias may refer pain to the teeth. Inquiring respectively about associated symptoms such as light or sound sensitivity or runny eyes and nose may help elucidate the presence of these conditions (5).

Sinusitis – The maxillary posterior teeth apices lie in close proximity to the maxillary sinus. Both these structures are innervated by the second division of the trigeminal nerve.

Neuropathic pain – A continuous burning or sharp pain secondary to an inciting event such as macrotrauma or an iatrogenic event such as pulpectomy, extraction and orthognathic

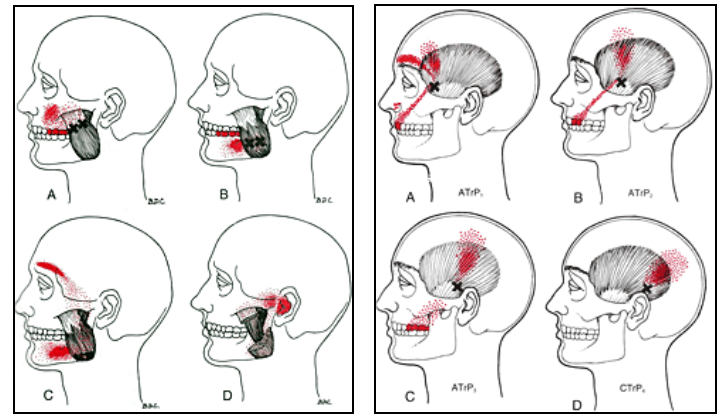


Fig. 2 - Illustration displaying myofascial pain referral patterns. Hypertonic saline injections into muscle points indicated with an “x” and their corresponding areas of reported pain are shown in red. (Travell, Simons 1983 with permission).

surgery. Neuroma formation at the site of nerve discontinuity along with central nervous system sensitization is the proposed mechanism of onset (6).

Tumor – Pain secondary to carcinoma is one of several worst case scenarios to consider. If exam is accompanied by neurologic deficit, referral to a neurologist is indicated (7).

Conclusion

Several non-odontogenic disorders can refer pain to the teeth and the astute clinician must be aware of conditions that may mimic odontalgia. Patients may also present with local factors that may complicate the diagnosis.

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